



A Test Lab Techno Corp.

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MPE Report

Test Report No.	: 1605FS15-01
Applicant	: EDIMAX TECHNOLOGY CO., LTD.
Product Type	: AC900 Outdoor AP
Trade Name	: EDIMAX
Model Number	: EW-7429HOA, GAP-429HOA, OAP900
Date of Received	: Feb.22, 2016
Test Period	: Feb.26, 2016
Date of Issued	: Jul. 15, 2016
Test Specification	: ANSI / IEEE Std.C95.1-1992 / IEEE Std. 1528-2013 47 CFR § 2.1091 47 CFR § 1.1310
Location of Test Lab.	: Chang-an Lab.

1. The test operations have to be performed with cautious behavior, the test results are as attached.
2. The test results are under chamber environment of A Test Lab Techno Corp. A Test Lab Techno Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples.
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1. Description of Equipment under Test (EUT)

Applicant	EDIMAX TECHNOLOGY CO., LTD. No.3, Wu-Chuan 3rd Road, Wu-Gu, New Taipei City 24891, Taiwan			
Manufacturer	EDIMAX TECHNOLOGY CO., LTD. No.3, Wu-Chuan 3rd Road, Wu-Gu, New Taipei City 24891, Taiwan			
Product Type	AC900 Outdoor AP			
Trade Name	EDIMAX			
Model Number	EW-7429HOA, GAP-429HOA, OAP900 (*Those model numbers differ from each other in selling region.)			
FCC ID	NDD9574291601			
Frequency Range	IEEE 802.11a U-NII Band I : 5180 - 5240 MHz IEEE 802.11a U-NII Band III : 5745 - 5825 MHz IEEE 802.11n 5GHz 20MHz U-NII Band I : 5180 - 5240 MHz IEEE 802.11ac 20MHz U-NII Band I : 5180 - 5240 MHz IEEE 802.11n 5GHz 20MHz U-NII Band III : 5745 - 5825 MHz IEEE 802.11ac 20MHz U-NII Band III : 5745 - 5825 MHz IEEE 802.11n 5GHz 40MHz U-NII Band I : 5190 - 5230 MHz IEEE 802.11ac 40MHz U-NII Band I : 5190 - 5230 MHz IEEE 802.11n 5GHz 40MHz U-NII Band III : 5755 - 5795 MHz IEEE 802.11ac 40MHz U-NII Band III : 5755 - 5795 MHz IEEE 802.11ac 80MHz U-NII Band I : 5210 MHz IEEE 802.11ac 80MHz U-NII Band III : 5755 MHz			
Transmit Power	IEEE 802.11a U-NII Band I : 0.004 W 5.49 dBm IEEE 802.11a U-NII Band III : 0.083 W 19.18 dBm IEEE 802.11n 5GHz 20MHz U-NII Band I : 0.002 W 3.97 dBm IEEE 802.11n 5GHz 20MHz U-NII Band III : 0.042 W 16.25 dBm IEEE 802.11n 5GHz 40MHz U-NII Band I : 0.002 W 3.96 dBm IEEE 802.11n 5GHz 40MHz U-NII Band III : 0.044 W 16.46 dBm IEEE 802.11ac 80MHz U-NII Band I : 0.002 W 3.52 dBm IEEE 802.11ac 80MHz U-NII Band III : 0.054 W 17.32 dBm			
Antenna information	Antenna	Model	Type	Max. Gain (dBi)
	Internal	C059-690332-A	PCB Antenna	13.9
	External	C059-690332-FO	PCB Antenna	12.9
Antenna Delivery	IEEE 802.11a U-NII Band: 1*T _x + 1*R _x (ANT-0) IEEE 802.11ac 20MHz/40MHz/80MHz U-NII Band: 2*T _x + 2*R _x (MIMO)			
Temperature Range	-30 ~ +60°C			
RF Evaluation	0.549 mW/cm ²			

The above equipment was tested by A Test Lab Techno Corp. For compliance with the requirements set forth in 47 CFR § 2.1091 / 47 CFR § 1.1310. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties



2. Human Exposure Assessment

Due to the design and installation of this product, it is not possible to conduct SAR evaluation. This is because client either manufactures or supplies the antenna(s) that will be used in the installation of this product. Therefore, this product will be evaluated as a mobile device per 47 CFR § 1.1310 titled "Radiofrequency radiation exposure limits", generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device as "a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. " This product is intended to be installed into a vehicle such that the unit is physically secured at one location. In the installation guide supplied with the product,

Client has made the following statement: "IMPORTANT: To meet the FCC's RF Exposure Guidelines, the antenna should be installed so there is at least 20 cm of separation between the body of the user and nearby persons and the antenna". Based on the installation of the transceiver and the antenna, the transmitters radiating structure is more than 20 cm from the user. Thus, this product is a "mobile device" as defined in section § 2.1091 paragraph (b).

Exposure evaluation
$S = \frac{PG}{4\pi R^2}$ Where S: power density P: power input to the antenna G: power gain of the antenna in the direction of interest relative to an isotropic radiator. R: distance to the center of radiation of the antenna.



3. RF Output Power

Band	Data Rate	CH	Frequency (MHz)	Average Conducted power (dBm)		
				ANT-0	ANT-1	ANT-0+1
IEEE 802.11a	6M	36	5180.0	5.49	---	---
		40	5200.0	5.48	---	---
		44	5220.0	5.17	---	---
		48	5240.0	5.09	---	---
		149	5745.0	16.39	---	---
		153	5765.0	19.18	---	---
		157	5785.0	19.17	---	---
		161	5805.0	18.95	---	---
		165	5825.0	16.88	---	---
	54M	36	5180.0	5.44	---	---
		40	5200.0	5.43	---	---
		44	5220.0	5.12	---	---
		48	5240.0	5.03	---	---
		149	5745.0	16.33	---	---
		153	5765.0	19.14	---	---
		157	5785.0	19.15	---	---
		161	5805.0	18.89	---	---
IEEE 802.11ac 20MHz	13M	36	5180.0	0.47	0.92	3.71
		40	5200.0	0.57	1.13	3.87
		44	5220.0	0.57	1.25	3.93
		48	5240.0	0.47	1.40	3.97
		149	5745.0	12.56	13.35	15.98
		153	5765.0	12.65	13.48	16.10
		157	5785.0	12.37	13.21	15.82
		161	5805.0	12.26	12.93	15.62
		165	5825.0	12.64	13.76	16.25
	156M	36	5180.0	0.43	0.86	3.66
		40	5200.0	0.52	1.08	3.82
		44	5220.0	0.52	1.20	3.88
		48	5240.0	0.42	1.37	3.93
		149	5745.0	12.52	13.32	15.95
		153	5765.0	12.63	13.44	16.06
		157	5785.0	12.31	13.19	15.78
		161	5805.0	12.21	12.88	15.57
IEEE 802.11ac 40MHz	27M	38	5190.0	0.57	1.17	3.89
		46	5230.0	0.59	1.28	3.96
		151	5755.0	13.26	13.63	16.46
		159	5795.0	13.18	13.64	16.43
	360M	38	5190.0	0.53	1.12	3.85
		46	5230.0	0.56	1.26	3.93
		151	5755.0	13.21	13.62	16.43
		159	5795.0	13.15	13.60	16.39
IEEE 802.11ac 80MHz	58.6M	42	5210.0	0.11	0.88	3.52
		155	5775.0	13.37	15.09	17.32
	780M	42	5210.0	0.06	0.86	3.49
		155	5775.0	13.34	15.06	17.29

4. Test Result

Band	Data Rate	Frequency (MHz)	Limit (mw/cm ²)	Distance (cm) [R]	Max Tune-up power (dBm) [P]	Directional Gain (dBi)	Numeric Directional Gain [G]	Duty Cycle	[P] x [G] With Duty Cycle (mW) [TP]	Power Density [S] (mw/cm ²)
IEEE 802.11a	6M	5180	1.000	20	5.60	13.90	24.55	1	89.140	0.018
		5200	1.000	20	5.60	13.90	24.55	1	89.140	0.018
		5220	1.000	20	5.30	13.90	24.55	1	83.190	0.017
		5240	1.000	20	5.20	13.90	24.55	1	81.290	0.016
		5745	1.000	20	16.50	13.90	24.55	1	1096.610	0.218
		5765	1.000	20	19.30	13.90	24.55	1	2089.540	0.416
		5785	1.000	20	19.30	13.90	24.55	1	2089.540	0.416
		5805	1.000	20	19.10	13.90	24.55	1	1995.500	0.397
		5825	1.000	20	17.00	13.90	24.55	1	1230.410	0.245
IEEE 802.11ac 20MHz (MIMO)	13M	5180	1.000	20	3.90	16.91	49.09	1	120.500	0.024
		5200	1.000	20	4.00	16.91	49.09	1	123.310	0.025
		5220	1.000	20	4.10	16.91	49.09	1	126.180	0.025
		5240	1.000	20	4.10	16.91	49.09	1	126.180	0.025
		5745	1.000	20	16.10	16.91	49.09	1	1999.830	0.398
		5765	1.000	20	16.20	16.91	49.09	1	2046.410	0.407
		5785	1.000	20	16.00	16.91	49.09	1	1954.310	0.389
		5805	1.000	20	15.80	16.91	49.09	1	1866.350	0.371
		5825	1.000	20	16.40	16.91	49.09	1	2142.860	0.426
IEEE 802.11ac 40MHz (MIMO)	27M	5190	1.000	20	4.00	16.91	49.09	1	123.310	0.025
		5230	1.000	20	4.10	16.91	49.09	1	126.180	0.025
		5755	1.000	20	16.60	16.91	49.09	1	2243.850	0.446
		5795	1.000	20	16.60	16.91	49.09	1	2243.850	0.446
IEEE 802.11ac 80MHz (MIMO)	58.6M	5210.0	1.000	20	3.70	16.91	49.09	1	115.080	0.023
		5775.0	1.000	20	17.50	16.91	49.09	1	2760.530	0.549

Note:

1. The Numeric Directional Gain calculated by $10^{(\text{Directional Gain(dBi)} / 10)}$.
2. Each band max power which perform MPE of any configurations.
3. Internal antenna of the antenna gain is 13.9dBi, the antenna of the external antenna gain 12.9dBi, so that the maximum antenna gain is 13.9dBi.
4. The device operating 802.11a mode is only with transmit signals to 1TX.
Directional Gain = Antenna Gain
5. The device operating 802.11n & 802.11ac mode is MIMO with transmit signals to 2TX.
Directional Gain = $10 \cdot \log[(10^{G_1/20} + 10^{G_2/20})^2 / N_{ANT}]$